

Chemical Analysis Report

SE-DIST-2024-02-06-01

Florida DEP Laboratory
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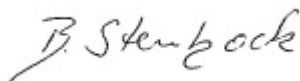
Event Description: **Algal Bloom Response - SE ROC**
Request ID: **RQ-2023-10-23-51**
Customer: **SE-DIST**
Project ID: **BLOOM-RESP**

Send Reports to:
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2199 South Rock Road
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Date Certified: 23-FEB-2024 11:29



Case Narrative

Unless otherwise noted, all samples included in this report were received in accordance with protocols referenced in Chapter 62-160, Florida Administrative Code (F.A.C.). Results published in this report pertain only to the samples as submitted to, and received by the laboratory. All times in this report are adjusted to the applicable Eastern Time Zone (EST or EDT).

Results for the following analytical groups are included in this report: Nutrients and Pesticides.

Scientific notation may be used in reporting very large or small values. Values reported using scientific notation will take the form of the following example: 1.3E+03, which is equivalent to 1.3×10^3 or 1300.

Unless otherwise noted, analytical values for soil and sediment samples are reported on a dry weight basis, and analytical values for waste and tissue samples are reported on a wet weight basis.

Results for TNI accredited tests met requirements established by The NELAC Institute. A double asterisk (**) is used to indicate an analyte/matrix/method for which the laboratory is not TNI accredited by the Florida Department of Health Environmental Laboratory Certification Program or where accreditation for that field of testing is not applicable.

Any significant anomalies or deviations from established protocols are documented in Non-Conformance Reports, which, where appropriate, are included within this analytical report. Additional comments related to specific analytical tests may be included as remarks following the analytical results for each sample. Such comments and remarks are for informational purposes only and are not intended to convey judgement about the usability of the reported data.

A quality control report on the performance of the test method for the submitted samples is included. Uncertainty associated with the analytical results contained in this report can be estimated from the reported quality assurance results and from published quality control acceptance limits for each analytical test. Matrix quality control results (matrix spike recoveries and matrix sample precision) pertain only to the matrix sample tested and do not necessarily reflect test method performance for other samples.

Typical matrix quality control (QC) measurements may include matrix spike recovery, matrix spike duplicate recovery, matrix spike precision and matrix sample precision. Not all matrix QC results may be available or reportable; where they are not an explanation is provided. Typical reasons for unavailable QC results include, but are not limited to, a) insufficient matrix sample to perform some or all QC measurements; b) analyte concentration in the sample replicated was too low for a meaningful measurement of precision and c) analyte concentration in the matrix sample spiked was too high (relative to the amount of analyte spiked) for a meaningful measurement of recovery. Where matrix QC results are unavailable, other method performance metrics (e.g., LCS recovery, LCS precision, surrogate recovery) may be used to assess performance of the method. Comments explaining any missing QC measurements are not intended to convey any adverse conclusions about the quality of the reported data.

Precision is reported as relative percent difference unless otherwise noted.

Quality Control codes as defined below may be used in this report to indicate results that are associated with one or more quality control elements which did not fall within established test method criteria. Such results may be qualified as estimates using a J qualifier as required by 62-160 F.A.C. Explanations are included in the report for any results that were reported as estimates for other reasons.

QC Codes used in this report may include:

- LCS – Recovery for the batch Laboratory Control Sample (LCS) was outside existing control limits;
- MS – Recovery for the batch matrix spike (MS) was outside existing control limits;
- CCV – Recovery for a continuing calibration verification (CCV) standard was outside existing control limits;
- SUR – Recovery of a surrogate (SUR) for associated analytes was outside existing control limits;
- RPD – The precision, measured as relative percent difference (RPD), of batch replicate measurements was outside existing control limits;
- RSD – The precision, measured as relative standard deviation (RSD), of batch replicate measurements was outside existing control limits;
- SMP – Sample - used precision derived from replicate analyses of a sample;

The following data qualifiers are used, where applicable, in this report as specified in 62-160 F.A.C.

- A - Value reported is the mean of two or more determinations.
- B - Results based on colony counts outside the acceptable range.
- I - The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.
- J - Estimated value and/or the analysis did not meet established quality control criteria.
- K - Actual value is known to be less than value given.
- L - Actual value is known to be greater than value given.
- N - Presumptive evidence of presence of material.
- O - Sampled, but analysis lost or not performed.
- Q - Sample held beyond normal holding time.
- T - Value reported is less than the criterion of detection.
- U - Material was analyzed for but not detected. The reported value is the method detection limit for the sample analyzed.
- V - Analyte was detected in both sample and method blank.
- X - Too few individuals to calculate SCI value.
- Y - The laboratory analysis was from an unpreserved or improperly preserved sample. The data may not be accurate.
- Z - Colonies were too numerous to count (TNTC).

Quality control information from overflow laboratories may not be included in this report. Please refer to the associated report from the overflow laboratory for additional information.

Sample Location: C3 at Wayside Park

Collection Date/Time: 02/05/2024 12:45

Field ID: SEHAB0106

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2466042	DEP SOP: NU-094-1	Color (true)	4.0	I	PCU	P441006	
2466043	EPA 350.1 Rev. 2.0	Ammonia-N	0.19		mg N/L	P441130	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.41		mg N/L	P440987	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.12		mg N/L	P441083	
	EPA 365.1 Rev. 2.0	Total-P	0.074		mg P/L	P441485	
2466044	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.030		mg P/L	P440989	
2466046	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P440959	
		Cylindrospermopsin	0.10	U	ug/L	P440957	
		Desmethyl microcystin LR	0.25	U	ug/L	P440957	
		Microcystin HILR	0.25	U	ug/L	P440957	
		Microcystin HtyR	0.25	U	ug/L	P440957	
		Microcystin LA	0.10	U	ug/L	P440957	
		Microcystin LF	0.10	U	ug/L	P440957	
		Microcystin LR	0.25	U	ug/L	P440957	
		Microcystin LW	0.25	U	ug/L	P440957	
		Microcystin LY	0.10	U	ug/L	P440957	
		Microcystin RR	0.10	U	ug/L	P440957	
		Microcystin WR	0.50	U	ug/L	P440957	
		Neosaxitoxin	0.50	UJ	ug/L	P440959	MS
		Microcystin YR	0.25	U	ug/L	P440957	
		Saxitoxin	0.50	U	ug/L	P440959	
		Nodularin-R	0.10	U	ug/L	P440957	

Ref. Method and Comment:

EPA 8321B: Refer to the Lab Analysis Report for an explanation of QC Codes.

Quality Assurance Report
Method Blank Results

Reference Method: DEP SOP: NU-094-1
Batch ID: P441006

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P441130

Component	Result	Code	Units
Ammonia-N	0.002	U	mg N/L

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P440987

Component	Result	Code	Units
Kjeldahl Nitrogen	0.080	U	mg N/L

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P441083

Component	Result	Code	Units
NO2NO3-N	0.004	U	mg N/L

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P441485

Component	Result	Code	Units
Total-P	0.002	U	mg P/L

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P440989

Component	Result	Code	Units
O-Phosphate-P	0.004	U	mg P/L

Reference Method: EPA 8321B
Batch ID: P440957

Component	Result	Code	Units
Cylindrospermopsin	0.10	U	ug/L
Desmethyl microcystin LR	0.25	U	ug/L
Microcystin H1LR	0.25	U	ug/L
Microcystin HtyR	0.25	U	ug/L
Microcystin LA	0.10	U	ug/L
Microcystin LF	0.10	U	ug/L
Microcystin LR	0.25	U	ug/L
Microcystin LW	0.25	U	ug/L
Microcystin LY	0.10	U	ug/L
Microcystin RR	0.10	U	ug/L
Microcystin WR	0.50	U	ug/L
Microcystin YR	0.25	U	ug/L
Nodularin-R	0.10	U	ug/L

Quality Assurance Report
Method Blank Results

Reference Method: EPA 8321B
Batch ID: P440959

Component	Result	Code	Units
Anatoxin-a	0.25	U	ug/L
Neosaxitoxin	0.50	U	ug/L
Saxitoxin	0.50	U	ug/L

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: DEP SOP: NU-094-1
Batch ID: P441006

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	98.6		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P441130

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	97.8		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P440987

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	108		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P441083

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	99.0		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P441485

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	102		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P440989

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	99.8		P	90 - 110

Reference Method: EPA 8321B
Batch ID: P440957

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Cylindrospermopsin	102		P	40 - 150
Desmethyl microcystin LR	79.9		P	40 - 150
Microcystin HILR	91.5		P	40 - 150
Microcystin HtyR	97.7		P	40 - 150
Microcystin LA	105		P	40 - 150
Microcystin LF	99.8		P	40 - 150
Microcystin LR	83.5		P	40 - 150
Microcystin LW	102		P	40 - 150
Microcystin LY	106		P	40 - 150
Microcystin RR	103		P	40 - 150
Microcystin WR	80.6		P	40 - 150
Microcystin YR	95.1		P	40 - 150
Nodularin-R	103		P	40 - 150

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: EPA 8321B
Batch ID: P440959

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Anatoxin-a	101		P	40 - 150
Neosaxitoxin	86.8		P	40 - 150
Saxitoxin	90.7		P	40 - 150

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P441130

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2466249	Ammonia-N	104	103	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P440987

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2466188	Kjeldahl Nitrogen	108	108	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P441083

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2466207	NO2NO3-N	97.7	99.2	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P441485

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2468030	Total-P	96.4	94.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P440989

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2466044	O-Phosphate-P	101	102	P/P	90 - 110

Reference Method: EPA 8321B
Batch ID: P440957

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2466046	Cylindrospermopsin	95.8	92.4	P/P	40 - 150
2466046	Desmethyl microcystin LR	86.1	83.6	P/P	40 - 150
2466046	Microcystin HiLR	95.5	85.3	P/P	40 - 150
2466046	Microcystin HtyR	92.9	89.5	P/P	40 - 150
2466046	Microcystin LA	102	104	P/P	40 - 150
2466046	Microcystin LF	105	102	P/P	40 - 150
2466046	Microcystin LR	85.4	87.4	P/P	40 - 150
2466046	Microcystin LW	108	103	P/P	40 - 150
2466046	Microcystin LY	108	103	P/P	40 - 150
2466046	Microcystin RR	107	103	P/P	40 - 150
2466046	Microcystin WR	83.3	85.5	P/P	40 - 150
2466046	Microcystin YR	92.5	92.8	P/P	40 - 150
2466046	Nodularin-R	102	99.2	P/P	40 - 150

Reference Method: EPA 8321B
Batch ID: P440959

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2466046	Anatoxin-a	88.4	81.6	P/P	40 - 150
2466046	Neosaxitoxin	39.8	36.6	F/F	40 - 150
2466046	Saxitoxin	56.3	52.3	P/P	40 - 150

Quality Assurance Report Precision

Reference Method: DEP SOP: NU-094-1
Batch ID: P441006

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2466168	Color (true)	7.36	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P441130

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2466249	Ammonia-N	0.440	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P440987

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2466188	Kjeldahl Nitrogen	0.529	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P441083

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2466207	NO2NO3-N	1.49	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P441485

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2468030	Total-P	1.92	Spike	P	0 - 20

Reference Method: EPA 8321B
Batch ID: P440957

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2466046	Cylindrospermopsin	3.56	Spike	P	0 - 30
2466046	Desmethyl microcystin LR	2.89	Spike	P	0 - 30
2466046	Microcystin H1LR	11.2	Spike	P	0 - 30
2466046	Microcystin HtyR	3.82	Spike	P	0 - 30
2466046	Microcystin LA	1.25	Spike	P	0 - 30
2466046	Microcystin LF	2.62	Spike	P	0 - 30
2466046	Microcystin LR	2.28	Spike	P	0 - 30
2466046	Microcystin LW	5.19	Spike	P	0 - 30
2466046	Microcystin LY	4.66	Spike	P	0 - 30
2466046	Microcystin RR	4.19	Spike	P	0 - 30
2466046	Microcystin WR	2.62	Spike	P	0 - 30
2466046	Microcystin YR	0.380	Spike	P	0 - 30
2466046	Nodularin-R	2.77	Spike	P	0 - 30

Quality Assurance Report
Precision

Reference Method: EPA 8321B
Batch ID: P440959

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2466046	Anatoxin-a	7.98	Spike	P	0 - 30
2466046	Neosaxitoxin	8.41	Spike	P	0 - 30
2466046	Saxitoxin	7.37	Spike	P	0 - 30

* Sample, spike and/or laboratory control sample precision (LCS) is reported.

Quality Assurance Report
Surrogates

Lab Sample ID: 2466046
Field Sample ID: SEHAB0106

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Anatoxin-a 13C4	91.5	P	30 - 160
EPA 8321B	Microcystin LR ethyl-d5	98.2	P	30 - 160

Quality Assurance Report
Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A124017
Included Lab Sample IDs: 2466044

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	97.2	98.2	P/P	90 - 110

Reference Method: DEP SOP: NU-094-1
Run ID: A124024
Included Lab Sample IDs: 2466042

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	96.1	97.6	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A124050
Included Lab Sample IDs: 2466043

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	100	102	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A124060
Included Lab Sample IDs: 2466043

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	98.5	98.4	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A124063
Included Lab Sample IDs: 2466043

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	96.3	101	P/P	90 - 110

Reference Method: EPA 8321B
Run ID: A124068
Included Lab Sample IDs: 2466046

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Cylindrospermopsin	107	109	P/P	50 - 160
Desmethyl microcystin LR	95.6	104	P/P	50 - 160
Microcystin H1IR	102	114	P/P	50 - 160
Microcystin HtyR	101	122	P/P	50 - 160
Microcystin LA	116	122	P/P	50 - 160
Microcystin LF	109	113	P/P	50 - 160
Microcystin LR	106	115	P/P	50 - 160
Microcystin LW	110	120	P/P	50 - 160
Microcystin LY	120	127	P/P	50 - 160
Microcystin RR	113	117	P/P	50 - 160
Microcystin WR	91.3	103	P/P	50 - 160
Microcystin YR	110	109	P/P	50 - 160
Nodularin-R	113	122	P/P	50 - 160

Quality Assurance Report
Calibration Verification

Reference Method: EPA 8321B
Run ID: A124069
Included Lab Sample IDs: 2466046

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Anatoxin-a	102	100	P/P	50 - 160
Neosaxitoxin	106	99.0	P/P	50 - 160
Saxitoxin	108	103	P/P	50 - 160

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A124261
Included Lab Sample IDs: 2466043

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	97.8	98.5	P/P	90 - 110

* Pass/Fail determinations are made for each bracketing calibration verification check.
Control limits for initial calibration checks may be different from those for continuing checks, depending on method requirements.
Where they are different, both control limits are provided.

Quality Assurance Report

Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery		LCS	Precision	MS
						SMP	
DEP SOP: NU-094-1	Color (true)	98.6				7.36	
EPA 350.1 Rev. 2.0	Ammonia-N	97.8	104	103			0.440
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	108	108	108			0.529
EPA 353.2 Rev. 2.0	NO2NO3-N	99.0	97.7	99.2			1.49
EPA 365.1 Rev. 2.0	Total-P	102	96.4	94.5			1.92
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	99.8	101	102			
EPA 8321B	Anatoxin-a	101	88.4	81.6			7.98
	Cylindrospermopsin	102	95.8	92.4			3.56
	Desmethyl microcystin LR	79.9	86.1	83.6			2.89
	Microcystin HiLR	91.5	95.5	85.3			11.2
	Microcystin HtyR	97.7	92.9	89.5			3.82
	Microcystin LA	105	102	104			1.25
	Microcystin LF	99.8	105	102			2.62
	Microcystin LR	83.5	85.4	87.4			2.28
	Microcystin LW	102	108	103			5.19
	Microcystin LY	106	108	103			4.66
	Microcystin RR	103	107	103			4.19
	Microcystin WR	80.6	83.3	85.5			2.62
	Microcystin YR	95.1	92.5	92.8			0.380
	Neosaxitoxin	86.8	39.8	36.6			8.41
	Nodularin-R	103	102	99.2			2.77
	Saxitoxin	90.7	56.3	52.3			7.37

Reference Method Descriptions

Method	Description	Associated Samples
DEP SOP: NU-094-1	True Color measured at 450 nm (not valid for NPDES monitoring)	2466042
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2466043
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2466043
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2466043
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2466043
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2466044
EPA 8321B	Microcystins in water matrices by HPLC/MS/MS	2466046
EPA 8321B	Saxitoxin in water matrices by HPLC/MS/MS	2466046

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
DEP SOP: NU-094-1	02/06/2024			02/06/2024 15:50	Anna M. Plaviak	2466042
EPA 350.1 Rev. 2.0	02/06/2024			02/08/2024 12:24	Khloe J Berg	2466043
EPA 351.2 Rev. 2.0	02/06/2024	02/07/2024 11:38	Ping Hua	02/08/2024 13:44	Ping Hua	2466043
EPA 353.2 Rev. 2.0	02/06/2024			02/07/2024 14:22	Fadila Guebre	2466043
EPA 365.1 Rev. 2.0	02/06/2024	02/15/2024 14:20	Adam P Silver	02/20/2024 10:09	James L Waggeberby	2466043
EPA 365.1 Rev. 2.0 dissolved	02/06/2024			02/06/2024 14:19	Adam P Silver	2466044
EPA 8321B	02/06/2024	02/08/2024 10:30	Tae K Lee	02/08/2024 11:48	Tae K Lee	2466046
	02/06/2024	02/08/2024 10:30	Tae K Lee	02/08/2024 16:02	Tae K Lee	2466046